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ZANZIBAR PROTECTORATE.

ANNUAL REPORT

ON THE

MEDICAL DIVISION

FOR THE YEAR

1919



ZANZIBAR.

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ZANZIBAR PROTECTORATE.

REPORT ON THE MEDICAL DIVISION

FOR THE YEAR 1919.

General.—Beyond the good fortune of obtaining the long tropical experience and skill of Dr. R. Howard as temporary Medical Officer of Pemba Island, the year has been disappointingly void of any progress or development. With inadequate staff and the necessity for lending a helping hand to the Public Health Division, it has barely been possible to maintain routine duties, and many have of necessity been entrusted to Subordinates.

The general health of the residents has fortunately been satisfactory.

One European birth was registered and one death, both British.

Common Ailments.—Amongst residents, digestive disorders particularly hepatic, catarrhal conditions from chill, mild subtertian malaria, rheumatism and manifestations of neurasthenia have, as usual predominated.

Invalidings and Deaths of Officials.—No European officer was invalided during the year. One officer succumbed to pneumonia following suppurative tonsillitis.

Hospital for Europeans.—The temporary European Hospital has been utilized and it is perhaps unnecessary again to reiterate its inconveniences.

As compared to 342 admissions during 1918 there were 72 in 1919 of which 24 were from H. B. M.'s Army and Navy.

NUMBER OF CASES TREATED.

Month	General.	Non-Government	Navy and Army	Total.
January	2	5	4	11
February	1	5	9	15
March	..	3	6	9
April	..	2	..	2
May	..	3	1	4
June	4	3	3	10
July	1	3	..	4
August	..	2	..	2
September	..	3	..	3
October	..	3	1	4
November	1	3	..	4
December	1	3	..	4
Total	10	38	24	72
Diseases	..	..	..	83

Table 1 includes the return of Diseases and Deaths (In-patients) for the European Hospital in 1919.

The following perhaps call for some comment :—

Dengue.—No cases, 2 in 1918.

Dysentery.—2 cases as compared to 3 in 1918, 16 in 1917.

Influenza.—2 admissions, as compared with 18, including 1 death in the previous year.

Malaria.—23 cases of subtertian and one chronic malaria, 91 cases in 1918.

Blackwater Fever.—No cases, 1 in 1918.

Pneumonia.—2 cases including one fatality, as compared to 6 admissions in 1918.

SUBORDINATE OFFICIALS.

Admission to the Subordinates' wing of the Native Government Hospital in Zanzibar numbered 50 as compared to 75,95,85, in the previous three years. Included were the following conditions mainly referable to the Tropics, or of interest, as comparisons with recent years :—

	1915.	1916.	1917.	1918.	1919.
Malaria ...	25	45	65	41	22
Undefined Fever ...	15	...	4	...	4
Blackwater Fever...	2	3	2	1	...
Dengue ...	1	...	...	...	...
Dysentery ...	...	...	1	...	1
Influenza ...	...	...	...	9	2
Ankylostomiasis ...	...	...	...	...	3

It is hoped that when a comprehensive Town Planning Scheme is ultimately evolved provision may be made for a suitable quarter of well designed houses for Asiatic Subordinates, further when the staffs of Public Health Division and Public Works Department permit of it that throughout Pemba and in Zanzibar Out-stations attention will be paid to improvement of their housing conditions.

NATIVES

Commoner Diseases.—Ulcers, rheumatism, bronchial troubles, filarial affections, ankylostomiasis, malaria, and venereal troubles predominate.

GOVERNMENT HOSPITAL FOR NATIVES AND SUBORDINATES, ZANZIBAR.

In 1919 in-patients numbered 816 with 54 deaths, as compared to 1281 with 108 deaths in 1918.

Out-patients numbered 8282, an increase of 419 over the total for 1918.

Operations under general anaesthesia numbered 216 as compared to 93,111,84 in the previous three years.

Seven sick Indian paupers were recommended and admitted to the free Siwa Haji beds, as compared to 19 and 12 in the two previous years.

Table 1 includes the diseases and deaths, both in-patients and out-patients for the year for the Natives and Subordinates Hospital in Zanzibar, Chake Chake Hospital in Pemba, and for all Out-District Dispensaries of both Islands.

The following diseases perhaps call for some comment:—

INFECTIVE DISEASES.

Beri-Beri.—6 cases, as compared to 9 with 2 deaths in 1918, and 1, 3 and 5 without fatalities in the previous three years. All the cases were amongst Chinamen.

Cerebro-Spinal Fever.—No cases, 2 and 5 in 1918 and 1917.

Dengue.—No cases as in 1918.

Dysentery.—41 admissions with 3 deaths, and 14 out-patients as compared to 6, 2 and 7 in 1918. Of the admissions 34 with 2 deaths were from the Central Prison where an epidemic occurred in the last few months of the year.

Enteric.—No cases.

Gonorrhoea and Urethritis.—13 admissions and 239 out-patients as compared to 17 and 374 in 1918.

Influenza.—12 admissions, 3 deaths and 12 out-patients, the corresponding figures for 1918 having been 133, 11 and 14.

Malaria and Undefined Fever.—Malaria, 99 in-patients with 1 death, out-patients 228, totalling 327. The totals were 580, 826, and 1043 in the three previous years. Undefined Fever, 25 in-patients and 680 out-patients totalling 705, as compared to 1084, 650 and 920 in the previous three years.

Blackwater Fever.—No admissions, 2 out-patients. The figures for the last four years having been 5, 6, 12 and 10.

Pneumonia.—10 in-patients with 4 deaths as compared to 47 in-patients, 18 deaths, and 3 out-patients in the previous influenza year.

Syphilis.—Admissions and out-patients are recorded as numbering 110 as compared to 139, 102, 240 and 380 in the previous four years.

Tetanus.—No admissions.

Tuberculosis.—16 in-patients with 4 deaths, 16 out-patients. In-patients numbered 37, 24 and 15 in the previous three years.

GENERAL DISEASES.

Anæmia.—336 cases. In the four previous years 199, 100, 318 and 648 were recorded. Many out-patients are probably suffering from ankylostomiasis but they neglect to return with specimens.

Debility.—18 in-patients, 4 deaths, 193 out-patients. The reduction from the corresponding figures of 38, 10 and 229 perhaps suggests more accurate diagnosis.

Chronic Rheumatism.—8 admissions and 430 out-patients. In 1918, 7 and 566.

LOCAL DISEASES.

Bronchitis.—23 in-patients and 1087 out-patients as compared to 34 and 749 in 1918.

Hepatitis Acute.—No cases. 7 in previous year.

Hepatic Congestion.—11 admissions, 216 out-patients, in 1918 compared to 14 and 393 in the current year.

Splenitis.—18 out-patients. 39, 32 and 207 in the previous three years.

Filarial Lymphagitis, Elephantiasis and Filariasis.—37 admissions and 69 out-patients, as compared to 41 and 76, 24 and 76, 54 and 125 in the previous three years.

Hæmaturia.—4 out-patients. In 1918 cases numbered 6.

Tumours-Malignant.—3 admissions with 1 death.

Ankylostomiasis—92 with 5 deaths, 58 out-patients, a total of 150 cases. Corresponding totals in previous years were 436, 182 and 268. Amongst reasons for diminution in cases were shortage of Thymol and bad results with Chenopodium.

ZIWANI MILITARY LINES.

The incidence of malaria amongst white officers stationed in these lines shows little if any abatement. The original mosquito-proofing of an area of verandah within which the dangerous hours from sunset to bedtime ought to be passed, was never efficiently constructed and has not been kept in repair, but in addition officers are careless as regards prophylactic quinine, wear shorts and short sleeves at and after sunset, and neglect to wear mosquito-proof footwear. The Lines are situated close to the partially drained, previously swampy areas of Kiungani and Migombani and although mosquitoes are few they are practically all Anophelines (*A. costalis*). These are maintained throughout the driest parts of the year in shallow surface wells scooped out by cottagers and agriculturists in those areas, and in trickles of water from springs, and in the wet season April-May they increase considerably in numbers.

The regular compulsory issue of 10 grains of quinine sulphate in solution twice weekly appears to provide a useful prophylactic measure so far as the native troops are concerned, with graduated dosage for their women and children, since many of the up-country tribes from which the K. A. Rifles are recruited show no immunity to malarial infection and yet, as will be seen in the following table, the malarial incidence is satisfactory low.

The following table shows the number of patients admitted to hospital for "All Diseases," Malaria, Dysenteric, Diarrhœa, etc., during the last few years:—

Year.	Average complement of men.	All Diseases	Deaths.	Malaria.	Dysenteric, Diarrhœa.	Cerebro-Spinal Fever.
1913	200	362	...	132	7	...
1914	155	185	2	50	8	...
1915	204	58	3	15	1	...
1916	...	109	1	34	3	...
1917	...	218	6	71	21	16
1918	...	...	...	...	...	...
1919	...	111	3	21	10	...

OUT-DISTRICT DISPENSARIES.

The inability to extend the sphere of medical and sanitary services to the out-districts owing to continued paucity of doctors and of Public Works staff is most disappointing.

The single additional out-district dispensary at Selem was in course of construction during the year but was not completed.

The following table gives the records from the established Out-districts Dispensaries. That at Mkokotoni is the only one with a permanently resident dispenser. Mwera is visited three times weekly by a dispenser and the number of patients applying for treatment there is most satisfactory. Koani is a small sub-dispensary for Government agricultural labourers in that area, it is stocked with a limited supply of ordinary drugs, dressings, etc., from the Mwera dispensary and is conducted by an employee of the Agricultural Department previously a hospital boy in Pemba. Chwaka is another sub-dispensary in the charge of a senior hospital employée and is visited weekly by a dispenser.

	In-patients.	Deaths.	Out-patients.
Mkokotoni	33	2	999
Mwera	—	—	2033
Koani	—	—	900
Chwaka	—	—	382

KILIMANI ASYLUM FOR INSANE NATIVES.

The defects of the building are, cramped compound and the necessity for carrying water from the adjacent Central Prison. It is hoped that this latter may be remedied by the erection of rain-water

tanks if a pipe-borne supply cannot be laid on from the main. Milder cases of insanity have been allowed to spend the greater part of the day on the grassy area outside the asylum walls but there is want of privacy and the staff of attendants is too small to control both those outside and the obstreperous and destructive inside the building.

The cells, latrines, etc., have been maintained satisfactorily clean and considering that the majority of the inmates are advanced cases of general paralysis the high death rate is not surprising. Admissions numbered 18 (13 males and 5 females) as compared to 11, 19 and 22 in previous years.

ANNUAL RETURN OF LUNATIC ASYLUM FOR THE YEAR 1919.

			Remaining at end of 1918.	Admitted.	Discharged.	Deaths.	Remaining at end of 1919.
Males	...	...	1	13	6	5	4
Females	...	...	2	5	1	2	3
Total			3	18	7	7	7

There is no suitable accommodation for insane persons other than Africans, unless totally oblivious of their surroundings, and until quarters are provided for a resident Sub-assistant Surgeon or Senior Dispenser for constant attendance on Asylum and Prison Infirmary there are long intervals, particularly at night, when inmates are of necessity entrusted to the care of African attendants, ayahs and orderlies who are neither energetic, conscientious nor sympathetic.

KILIMANI CENTRAL PRISON.

The cleanliness and general management of this Prison have been satisfactory. The various routines, detailed in previous Annual Reports, of quinine prophylaxis, precautions against water-borne diseases, and measures for preventing bug infestation of sleeping mats, etc., have been strictly carried out.

The burial of excreta was considered a possible source of the annual plague of flies (*Musca domestica*) and the incineration of bucket contents was inaugurated instead. The particular design of incinerator has with experience been proved capable of improvement for this purpose and one of a different design is promised. The prison precincts and surrounding grounds were carefully searched for potential fly-breeding media on several occasions, always with negative results, but in the last few months of the year the annual infestation by flies occurred and with them an epidemic of Dysentery

which by the close of the year had amounted to 50 cases with 6 deaths. It seems evident that the flies are attracted by the congregation of human beings and brought from some distance by prevailing winds, probably from private Indian plantations where cattle manure is used.

Cases of dysentery as they occurred were promptly removed from the Prison Infirmary to the town Native Government Hospital to get them and their infection out of the fly infested area, and continuous efforts were made to kill off adult flies by fly-papers, hanging wires dipped in "tanglefoot" preparation, formaline solution, fly-traps, etc; bed-pan contents were disposed of by incineration as quickly as possible and vessels in use were kept covered with anti-septic soaked cloths.

It must be confessed that the measures taken against adult flies made little or no appreciable difference in their numbers and that they were more affected by weather conditions, regularly showing an increase after showery, dull days, and diminishing after a few hot, dry days.

Prisoners admitted to the Central Prison during the year numbered 1100 (males 1060 and females 40) as compared to 1057 in 1918.

The following table states the numbers of prisoners treated in recent years :—

Year.	Out-patients.	In-patients.
1914	842	152
1915	481	111
1916	481	107
1917	583	77
1918	1010	267
1919	1159	235

Of the 235 in-patients at the Prison Infirmary 66 were transferred to the Native Government Hospital.

Deaths numbered 21 as compared to 19, 10, 9, 13 and 15 in the five previous years.

The recorded causes of death were as follows :—

Dysentery	6
Diarrhoea	5
Ankylostomiasis	3
Debility	2
Tuberculosis	1
Paralysis	1
Enteritis	1
Peritonitis	1
Undefined	1

Total ... 21

STAFF.

Dr. Curwen, Principal Medical Officer, returned from privilege leave on 6th February and from 2nd August, in addition to normal duties, acted Medical Officer of Health in the absence of any doctor to fill either of the two vacancies in the Public Health Division.

Dr. de Souza, Medical Officer, acted Principal Medical Officer until 6th February and was absent on privilege leave from 26th May to the close of the year.

Dr. Waller, temporary Medical Officer, was stationed at the Natives' and Subordinates' Hospital throughout the year except for an absence on short leave in South Africa from 2nd February to 22nd May.

Dr. Howard, temporary Medical Officer, in charge of Pemba Island, was stationed at Chake Chake throughout the year.

Mrs. Zurcher, Matron of Nursing Staff, was on duty in Zanzibar throughout the year.

Miss Brewerton, Nursing Sister, was sister-in-charge of European Hospital.

Miss Chambers, Nursing Sister, was stationed at Natives' and Subordinates' Hospital throughout the year.

Miss Marson, Nursing Sister, was absent on privilege leave from 21st February to 5th December.

Miss Fox, Nursing Sister, resigned, on completion of her first term of duty on 22nd March, 1919.

Miss Gittins, Nursing Sister, was stationed at Natives' and Subordinates' Hospital throughout the year.

Miss Huntley, temporary Nursing Sister, was on duty at both Zanzibar hospitals during the year and on 9th December proceeded to Egypt in attendance upon an invalided officer.

Mrs. Howard, Nursing Sister, was on duty at Chake Chake Hospital in Pemba.

Miss Bailey, Nursing Sister, arrived on first appointment on 3rd December.

The excellent work performed by our Nursing Staff during the war was suitably recognized by the decoration of Mrs. Zurcher and Miss Brewerton with the order of the Royal Red Cross

Sub-Assistant Surgeon Joshi was stationed at Weti in Pemba throughout the year. Sub-Assistant Surgeon Ram Rao was transferred to Mafia Island on 3rd March, 1919. Sub-Assistant Surgeon Niamath Ullah arriving on first appointment was stationed at Ziواني Lines with additional charge of Prison Infirmary and Lunatic Asylum.

The work of Dispensers at the Government Hospital and Out-district Dispensaries has been satisfactory. Mr. I. B. Martins, clerk and storekeeper, returned from privilege leave on 17th March, during his absence Mr. S. R. Fernandes was transferred from Chake Chake, Pemba, to the central medical stores in Zanzibar.

TABLE 1.

Returns of Diseases and Deaths for the Year 1919
for the Protectorate Hospitals and Dispensaries.

Diseases	Europeans		Natives		
	Zanzibar		Zanzibar and Pemba		
	In-patients		In-patients		Out-patients
	Admissions	Deaths	Admissions	Deaths	Total
INFECTIVE DISEASES.					
Beri-Beri .. ..	..	..	8	1	1
Chicken-pox .. ..	..	..	2	..	3
Dysentery	2	..	93	7	71
Erysi elas	1	..	2	..	..
Gonorrhoea .. ..	..	..	17	..	809
Influenza	2	..	21	4	13
Leprosy—(a) Nodular .. ..	..	..	1	..	2
Malaria (b) Sub-Tertian	23	..	125	1	1276
(c) Chronic Malaria	1	..	28	..	256
(d) Black-water .. ..	..	..	2	..	5
Pneumonia	2	1	23	8	7
Rheumatim, Acute	1	..	7	..	31
Septicaemia .. ..	..	..	2	2	..
Syphilis—(a) Primary	1	..	12	..	64
(b) Secondary	1	..	3	..	63
(c) Tertiary .. ..	..	..	10	..	25
(d) Inherited .. ..	..	..	2	..	1
Tuberculosis	2	..	19	6	79
Whooping Cough .. ..	..	..	..	..	31
Yaws .. ..	..	..	28	..	96
Mumps .. ..	..	..	..	..	3
Undefined Fever	4	..	28	..	725
Other Diseases .. ..	..	..	1	..	1
INTOXICATIONS.					
Alcoholism	1	..	2	..	3
Other Diseases .. ..	..	..	1	1	..
GENERAL DISEASES.					
Anæmia	1	..	6	..	1044
Diabetes .. ..	..	..	2	..	7
Debility	2	..	26	6	354
Rheumatism—Chronic .. ..	..	..	23	..	1278
LOCAL DISEASES.					
<i>Diseases of the Nervous System.</i>					
Sub-Section 1.					
Neuritis .. ..	..	..	1	..	4
Meningitis .. ..	..	..	1	1	..
Encephalitis .. ..	..	..	1	1	..
Other Diseases .. ..	..	..	..	..	3
Sub-Section 2.					
Apoplexy .. ..	..	..	5	2	..
Paralysis	1	..	11	2	4
Epilepsy .. ..	..	..	7	2	6
Neuralgia .. ..	..	..	2	..	197
Paraplegia .. ..	..	..	2	..	10
Neurasthenia	2	..	..	..	2
Other Diseases .. ..	..	..	2	..	1
Sub-Section 3.					
<i>Mental Diseases</i>					
Mania .. ..	..	..	2	..	..
Dementia .. ..	..	..	1	1	..
Carried forward ..	47	1	529	45	6475

TABLE I—*continued.*

Return of Diseases and Deaths for the Year 1919.
for the Protectorate.

Diseases	Europeans		Natives		
	Zanzibar		Zanzibar and Pemba		
	In-patients		In-patients		Out-patients
	Admissions	Deaths	Admissions	Deaths	Total
Brought forward ..	47	1	529	45	6475
LOCAL DISEASES—(<i>contd.</i>)					
Delusional Insanity .. ..	..	..	1	..	2
Other Diseases	1	..	5	1	..
<i>Diseases of the Eye</i>					
Blepharitis .. ..	..	..	4	..	23
Conjunctivitis .. ..	..	..	6	..	406
Keratitis .. ..	..	..	1	..	6
Ulceration of Cornea .. ..	..	..	9	..	29
Iritis .. ..	..	..	3	..	8
Cataract .. ..	..	..	25	..	42
Ruptured Eye-Ball .. ..	..	..	1	..	..
Dacro-cystitis .. ..	..	..	2	..	..
Entropion .. ..	..	..	1	..	..
Other Diseases .. ..	..	..	12	..	48
<i>Diseases of the Ear</i>					
Inflammation	1	..	3	..	153
Other Diseases .. ..	..	..	1	..	75
<i>Diseases of the Nose</i>					
Coryza .. ..	..	..	..	..	109
Other Diseases .. ..	..	..	..	..	8
<i>Diseases of the Circulatory System</i>					
Endocarditis .. ..	..	..	..	..	2
Valvular, Mitral .. ..	..	..	6	3	1
„ Aortic .. ..	..	..	..	..	1
Other Diseases .. ..	..	..	5	3	4
<i>Diseases of the Respiratory System</i>					
Laryngitis .. ..	..	..	2	..	11
Bronchitis .. ..	..	..	33	..	2316
Broncho-pneumonia .. ..	..	..	..	..	3
Empyema .. ..	..	..	3	..	..
Pleurisy .. ..	..	..	1	..	6
Asthma .. ..	..	..	5	..	199
<i>Diseases of the Digestive System</i>					
Stomatitis	1	..	1	..	165
Caries of teeth	2	..	2	..	845
Glossitis .. ..	..	..	..	..	1
Pharyngitis .. ..	..	..	..	..	54
Tonsillitis	2	..	1	..	98
Gastritis	1	..	..	..	9
Ulceration of Stomach	1	..	..	..	..
Dyspepsia	1	..	2	..	193
Enteritis .. ..	..	..	4	2	4
Appendicitis	2	..	..	..	..
Colitis	1	..	1	..	3
Hernia .. ..	..	..	82	1	82
Diarrhœa .. ..	..	..	68	6	190
Constipation .. ..	..	..	9	..	2668
Colic .. ..	..	..	6	..	297
Hæmorrhoids .. ..	..	..	8	..	42
Hepatitis, Acute	1	..	..	..	..
Carried forward ..	61	1	842	61	14578

TABLE I—*continued.*

Return of Diseases and Deaths for the Year 1919
for the Protectorate.

Diseases	Europeans		Natives		
	Zanzibar		Zanzibar and Pemba		
	In-patients		In-patients	Out-patients	
	Admissions	Deaths	Admissions	Deaths	Total
Brought forward ..	61	1	842	61	14578
LOCAL DISEASES—(contd.)					
<i>Diseases of the Digestive System</i>					
Hepatic Congestion	4	..	16	..	394
Cirrhosis, Hepatic .. ..	..	..	6	1	2
Abscess do.	1	..	..	..	..
Jaundice .. ..	..	..	2	1	4
Peritonitis	1	..	2	1	2
Ascites .. ..	..	..	2	..	4
Other Diseases .. ..	..	..	2	1	19
<i>Diseases of the Lymphatic System</i>					
Splenitis	2	..	..	..	143
Inflammation of Lymphatic Gland ..	1	..	4	..	52
Suppuration of do. .. ..	..	..	8	..	14
Lymphangitis .. ..	..	..	..	..	30
do. Filarial .. ..	..	..	1	..	34
Lymph Scrotum ... ..	..	..	4	..	..
<i>Diseases of the Urinary System</i>					
Nephritis, Acute .. ..	..	..	..	..	5
„ Chronic .. ..	..	..	7	2	6
Pyelitis ... ..	..	..	..	..	1
Cystitis .. ..	..	..	1	..	22
Hæmaturia .. ..	..	..	..	..	12
Chyluria ... ..	..	..	..	..	2
Bilharzia ... ..	..	..	7	..	72
Other Diseases .. ..	..	..	..	..	2
<i>Diseases of the Generative System</i>					
Male Organs—					
Urethritis, Acute	1	..	2	..	11
do Chronic .. ..	..	..	..	..	6
Stricture .. ..	..	..	12	..	45
Prostatitis .. ..	..	..	2	..	2
Soft Chancre .. ..	..	..	1	..	111
Hydrocele .. ..	..	..	61	..	163
Varicocele .. ..	..	..	1	..	6
Orchitis .. ..	..	..	7	..	74
Epididymitis .. ..	..	..	1	..	3
Abscess of Testicle .. ..	..	..	2	..	5
Haematocoele .. ..	..	..	2	..	..
Other Diseases	1	..	12	..	21
Female Organs—					
Ovaritis	1	..	..	..	1
Ovarian Cyst .. ..	..	..	3	..	6
Endometritis .. ..	..	..	3	..	2
Vaginitis .. ..	..	..	1	..	3
Amenorrhœa .. ..	..	..	..	..	3
Dysmenorrhœa .. ..	..	..	..	..	7
Menorrhagia .. ..	..	..	..	..	4
Abortion .. ..	..	..	..	..	1
Premature Birth .. ..	..	..	..	..	1
Puerperal Septicæmia .. ..	..	..	1	1	..
Mastitis .. ..	..	..	..	..	2
Abscess, Breast .. ..	..	..	2	..	2
Confinements	1	..	6	..	..
Carried forward ..	74	1	1023	68	15877

TABLE I—*continued.*

Return of Diseases and Deaths for the Year 1918
in the Protectorate.

Diseases	Europeans		Natives		
	Zanzibar		Zanzibar and Pemba		
	In-patients		In-patients		Out-patients
	Admissions	Deaths	Admissions	Deaths	Total
Brought forward ..	74	1	1023	68	15577
LOCAL DISEASES—(contd.)					
Female Organs—					
Uterine Fibroid	11	..	6
Uterine Polypus	1	..	..
Other Diseases	4	..	9
<i>Diseases of the Organs of Locomotion</i>					
Osteitis	6	..	5
Arthritis	1	..	5
Synovitis ..	1	..	7	..	54
Bursitis	4	..	..
Myalgia	88
Necrosis	4	..	..
Other Diseases	1	..	7
<i>Diseases of Connective Tissue</i>					
Cellulitis	15	2	9
Abscess ..	2	..	52	2	222
Elephantiasis	33	..	55
Other Diseases	2	..	4
<i>Diseases of the Skin</i>					
Urticaria	9
Eczema	1	..	91
Boils ..	3	..	2	..	212
Carbuncle	1	..	2
Psoriasis	2
Tinea	189
Tinea Cruris	1	..	50
Scabies	2	..	389
Prickly Heat	36
Ulcers	123	..	3780
Other Diseases	14	..	222
INJURIES					
General	30	2	319
Local ..	3	..	143	3	1825
Tumours, Simple	27	1	5
do Malignant	8	1	2
Snake bite	1	..	4
Other Diseases	3
Nematoda—					
Ascaris	28	..	17
Filariasis	31	..	100
Strongylus	17	..	..
Ankylostomiasis	359	8	684
Schistossomum Mazoni	1	..	..
Other Diseases	2
Insecta—					
Myiasis	1	..	75
Other Diseases	2
Total ..	83	1	1954	87	24361

H. CURWEN,
Principal Medical Officer.

FINANCIAL, MEDICAL DIVISION.

Statement of Expenditure and Revenue for the year 1919.

EXPENDITURE.

Details	Estimated					Actual				
	Rs.	cts.		s.	d.	Rs.	cts.	£	s.	d.
MEDICAL.										
Personal Emoluments ..	115,093	0	7,673	0	0	100,084	15	6,672	5	7
<i>Other Charges.</i>										
Fuel and Light ..	6,000	0	400	0	0	4,863	53	324	4	8
Incidental Expenses ..	700	0	47	0	0	317	54	21	3	5
Maintenance of Hospitals ..	25,000	0	1,666	0	0	23,339	73	1,555	19	7
Medical and Surgical Stores ..	25,000	0	1,667	0	0	18,222	48	1,214	16	8
Passages ..	22,500	0	1,500	0	0	14,336	71	955	15	7
Purchase of Opium ..	4,500	0	300	0	0	0	25	0	0	4
Rent of house ..	2,100	0	140	0	0	1,200	0	80	0	0
Travelling Expenses ..	1,300	0	87	0	0	201	48	13	8	8
Total Expenditure ..	202,193	0	13,480	0	0	162,565	87	10,837	16	6
Special Expenditure ..										
Bedsteads and wire mattresses ..	1,500	0	100	0	0	770	1	51	6	8
Furniture and Equipment for New Dispensary ..	600	0	40	0	0	0	0	0	0	0
Total Expenditure ..	206,793	0	13,620	0	0	163,335	88	10,889	1	2

REVENUE.

Details	Estimated					Actual				
	Rs.	cts.	£	s.	d.	Rs.	cts.	£	s.	d.
Hospital charges from European and Native Hospitals, Sale of Drugs, etc. ..	21,500	0	1,433	0	0	18,280	36	1,218	13	10
Sale of Opium ..	9,000	0	600	0	0	6,141	14	409	8	3
Total Revenue ..	30,500	0	2,033	0	0	24,421	50	1,628	2	1

ANNUAL REPORT OF THE MEDICAL DIVISION PEMBA, 1919.

General.—During 1918 the shortage of doctors was so great that for 9 months of the year the island of Pemba was left without a Resident Medical Officer. The work was carried on as far as possible by the Sister, the Sub-Assistant Surgeon and Dispensers, with occasional visits from the P. M. O. from Zanzibar. Under these conditions, operation work and microscopical investigations were practically impossible, and the activities of the hospitals were necessarily much curtailed. Further in October and November the prevailing pandemic of influenza visited the island, and while it served to swell the numbers of patients admitted to the hospitals during the year, it still further disorganized the medical work.

In January, 1919, Dr. Howard took over the duties of Medical Officer, and Mrs. Howard became Sister-in-Charge, and both were resident at Chake Chake throughout the year. It soon became evident that the set-back of the year before was only temporary, and that the patient labours of former Medical Officers and Sisters had done much to overcome the prejudices and gain the confidence of the people, and to make them willing to accept the benefits of European medical treatment.

The hospital rapidly filled, and not infrequently its accommodation has been strained to the uttermost, and several extra stretcher beds have had to be used, while there has generally been a considerable list of patients waiting for non-urgent operations.

The out-patients greatly increased and reached a total of 6102 at Chake Chake as against 3785 in 1917. A more important point is that a great majority of these were not Government employees, showing that the general population of the island were beginning to appreciate the treatment offered by the Government. It is also encouraging to note that there has been a great increase in "Repetition Cases". While all statistics are notoriously fallacious, it is probable that the real criterion of the work done in an out-patient department is to be sought in the number of these repetition cases rather than in the number of so-called "New Cases". These latter always include numbers of workmen, who, having been absent from or late for work, find it convenient to attribute such to a "stomach ache", or "fever yesterday"; while the former show the numbers of those who really feel that they have benefited from treatment, and who are willing to continue it until they are cured.

The development in the operative work is shown by the following figures:—

Operations in Pemba 1915	32
1916	62
1917	19
1918	—
1919	220

Surgical operations being objective probably appeal to the native far more than medicinal treatment or preventive medicine, and to a great extent the work of the staff was concentrated on this form of treatment, while many medical cases *e.g.* patients suffering from Malaria or Ankylostomiasis were treated as out-patients. Had all suitable cases who were willing to come into hospital been admitted, it would have been easy to fill the 24 beds three times over.

Appended is the list of the diseases which were encountered in in-patients during the year under review. *Appendix A.*

The whole hospital staff have worked most loyally and keenly throughout the year. In spite of the increased work only one addition to the staff has been made, the senior hospital attendant having been promoted to be an apprentice. He acts also as dresser at operations, and is responsible for the sterilizing and care of the theatre instruments. The clerk, Mr. S. R. Fernandes, has always been most efficient and prompt in all his manifold duties, and had all the statistics for the year 1919 tabulated and in perfect order before he left for privilege leave in the middle of January, 1920.

The dispenser, Mr. d'Cruz, has worked indefatigably, Sundays and holidays included, throughout the year, and in addition to his other duties has acted as anæsthetist on 79 occasions. This work often occupies the greater part of his afternoon, and he has in consequence had to work long after the ordinary dispensary hours in order to complete his clerical duties.

Structural Alterations.—The new theatre and the out-patient room, which were built in 1918 were used throughout the year. The theatre required some alterations in the windows to improve the lighting, and better ventilation. These improvements were carried out in December of this year, and now it is in every way satisfactory.

A new bathroom attached to the men's ward, and also a fly proof latrine for feeble and practically bed-ridden patients was sanctioned during the year, and was under construction, but it was not finished by the end of the year. A further need is that of two rooms for the isolation of septic or venereal cases, or for the observation of possibly infectious cases &c. The erection of this building has been allowed for in the estimates of 1920.

OFFICIALS.

European Officials.—The health of the European staff has been good throughout the year. This is probably mainly due to the fact that for the greater part of the year most of the officials were old residents in the tropics, and had learned how maintain their health in a malarial climate.

Regular prophylactic quinine is a necessity in Pemba, and should be made compulsory by regulation instead of being left as at present to the advice and persuasion of the Medical Officer.

Pemba, with its relatively heavy rainfall distributed throughout a great part of the year, its damp clay soil, and extraordinarily heavy dews, undoubtedly causes a rheumatic tendency in its residents. Recently four new houses for officials have been built in Chake Chake. These are all of the bungalow type placed straight on the clay, without a damp-proof course, and without ventilation under the floors. In each case these bungalows have replaced former two storied buildings. It is to be feared that from the health standpoint the change from an upper storey to a ground floor bed-room will prove a most retrograde step.

It has been frequently pointed out in previous reports that the East Coast of Pemba is far dryer than the West Coast, and that a Rest Bungalow for Europeans, say at Vitongoji, which is only 6 miles from Chake Chake, and therefore easily accessible for week-ends, or short periods of rest, would be of great advantage to the health of the staff.

Subordinate Staff.—The health of the Subordinate staff has on the whole been fair, and only 5 patients were admitted into the Subordinate ward. Two of these were however cases of Blackwater fever. One of these patients, the Treasury clerk of Mkoani, suffered from a very mild attack, the other, the Judicial clerk, Chake Chake, had a severe attack. Both were invalided to Zanzibar.

Opportunities for exercise and recreation are terribly lacking in Pemba, and a Tennis or Badminton court and a reading room are really needed to supply the relaxation necessary to maintain health.

The Prison.—The health of the prisoners has remained good throughout the year. One elderly man died in the hospital from Pneumonia after influenza. Only 12 prisoners have been admitted into hospital; a number of others have been treated as out-patients for Ankylostomiasis. At one time during the year Rhagades at the corners of the mouth made its appearance among the prisoners. This symptom has been described as almost pathognomonic of Pellagra. It is doubtful whether it has any connection with Pellagra, but it does appear to be an indication of an over monotonous or one-sided diet. In this case the symptom disappeared when papaws and fresh green vegetables were added to the diet.

NATIVE HOSPITALS AND DISPENSARIES.

PREVALENT DISEASES.

Malaria.—Mainly subtertian, though with some cases of benign tertian amongst Indians, is very prevalent.

Among native children the epidemic and the splenic indices are probably near 100% and malaria is doubtless the cause of much infant mortality. It cannot be truthfully said that native mothers avail themselves of hospital treatment for their babies to any great extent, so little can be done to check this mortality. Possibly a travelling

hospital might in time convince them of the nature and the curability of the attacks of fever from which their babies suffer. The adult native has acquired such considerable immunity to malaria that his attacks are of short duration and easily treated. Practically all acute malarial cases were treated as out-patients, and not admitted to hospital as formerly. A weekly dose of prophylactic quinine is given to all subordinates, askaris, prisoners and school boys; 3768 such doses were administered during the year.

The Indian community suffer severely from malaria, largely owing to inadequate quinine treatment. Enlarged spleens are almost general, and definite malarial cachexia is common. Two cases of blackwater fever occurred in Indian children.

The sale of quinine by the Government at cost price has several times been urged, and would undoubtedly be of great benefit to the Indians, who are not like the natives entitled to free hospital treatment. At the present moment, owing to the abnormal price of quinine the ordinary Government charge is not much above cost price, except in the case of babies, where, hitherto the small doses required have been charged for at the same rate as for adults. I have suggested that for babies under two years of age the price should be lowered to $\frac{1}{4}$ that charged for adults. This would encourage the Indians to treat their babies more systematically with quinine, and should do something towards preventing the prevalent malarial cachexia.

Filariasis.—Is terribly prevalent with all its usual varied clinical sequelæ which furnish a large number of the operation cases. Perhaps its most distressing manifestation is the occurrence of frequent severe attacks of filarial fever. Recently favourable results have been obtained in the West Indies by treating these patients with a streptococcus vaccine prepared from the local strain of coccus. It is to be hoped that when the Health Office staff reaches its full complement it will be possible to supply the vaccine for treatment of these cases in Pemba.

Ankylostomiasis.—Is a scourge throughout the island. Its prevalence may be judged from the following facts. Only 33 patients were definitely admitted for ankylostomiasis, but of 226 others who were admitted for operation or for other diseases 210 or 92·9% were found to be infected. A determined effort was made to treat these cases, and in addition to the in-patients 620 out-patients were treated. In every case the diagnosis was made by the examination of the stools. The drug used was almost entirely *Ol. Chenopodii*; 45 minims was given in 3 doses of 15 minims each at one hour's interval and followed by an ounce dose of Castor Oil. This was not repeated till after one week had elapsed. Each dose was given in a teaspoonful of soft sugar. For children the dose was reduced according to the ordinary age reckoning. If intensive treatment was necessary three 80 grain doses of Thymol were given on consecutive

days, beginning 3 days after the *Ol. Chenopodii* had been given. Owing to lack of time it was not possible to fully check the results by further examination of stools, but the few that were so checked when compared with previous tests made at the U.M.C.A. Hospital in Zanzibar seemed to show that *Ol. Chenopodii* was fully as effective and probably superior to Thymol and Beta Naphtol, about 50% of the cases being cured after one day's treatment. No serious after effects were encountered, even though so many of the cases were out-patients. Two in-patients died of the disease, one within 24 hours of admission and before any treatment had been given; the other, a very bad case, had been given both *Ol. Chenopodii* and Thymol, but his death from heart failure did not seem in any way connected with this treatment.

Urinary Bilharzia.—Is prevalent, far more so than in Zanzibar, and many of the cases are very severe ones in quite young boys. Sixty-two out-patients were seen and 7 in-patients had this disease concurrently with the one for which they were admitted. Pressure of work prevented any attempt to treat these cases by the new method elaborated in the Sudan, of intravenous injections of Tartar Emetic, from which extraordinarily beneficial results have been obtained; but with more medical help and with the co-operation of the Economic Biologist in mapping out the affected areas of the island and suggesting suitable preventive measures, a determined effort might be made to stamp out this disease which is a cause of great suffering.

Frambæsia or Yaws.—Has been and still is prevalent. Recent cases are frequently seen, while the tertiary sequelæ due to old Yaws perhaps contracted in childhood are constantly seen amongst out-patients. It is a matter of serious regret that these tertiary symptoms, though described in all text books of Tropical Medicine seem often to pass unrecognised, and Tertiary Yaws has not yet found its place in the list of diseases in the Colonial Medical Reports. Treatment of Yaws by Salvarsan has not been possible and reliance has had to be placed on Castellani's Yaws Mixture. With the construction of two rooms for local isolation it should be possible to give these patients the benefit of Salvarsan treatment but probably only a travelling hospital in the most infected districts would avail to stamp out the disease.

Ulcers.—Supply by far the largest numbers under one disease heading for out-patients. Probably there is no type of disease which needs more care in treatment, or calls for more thorough co-operation between the surgeon, the hospital dresser and patient, or gives a more obvious and satisfactory result when the treatment is carried to a successful issue. If the case is treated as an out-patient absolute regularity of attendance must be insisted on, while if the case is admitted to hospital it is useless to discharge the patient until the ulcer is absolutely healed.

Broadly speaking there are three main types of ulcers encountered.

1. Acute ulcers, ranging in severity from superficial septic dermatitis to deep septic ulcers and typical tropical phagadæna. These severe types come specially in the wet season, often almost as an epidemic. The only satisfactory treatment is thorough scraping under an anæsthetic and Thiersch's grafting. Twenty-one such ulcers were scraped and 4 cases grafted, with completely satisfactory results.

2. Tertiary Ulcers, mostly due to Tertiary Yaws, but sometimes to Tertiary Syphilis. These when diagnosed and treated with the appropriate remedies rapidly heal, while unrecognised they often go on for years causing dreadful scarring and deformity.

3. Chronic indolent hide-bound ulcers, mostly due to neglect or lack of suitable treatment in the early stages. These are most disappointing cases and often take months to heal, and even then the scar is weak, and they are liable to break down again.

Injuries.—During the clove picking season accidents due to falls from trees are of frequent occurrence and of all degrees of severity. Fighting with knives is still not uncommon in Pemba and a number of serious incised wounds were treated. If these patients are brought in at once and treated antiseptically the results are surprisingly good.

Operations.—Two hundred and twenty operations were performed during the year; 40 on out-patients and 180 on in-patients. Local anæsthesia (Cocaine, Eucaine or Novocaine) was employed on 54 occasions. Chloroform was administered for general anæsthesia 166 times (87 times by the Sister, and 79 times by the Dispenser). No fatality occurred. The Vernon Harcourt chloroform inhaler was used on all occasions when possible, and is certainly the safest method for the non-qualified anæsthetist. I should like to suggest that the junior dispensers when in Zanzibar should have a course of instruction in this method of administering chloroform, and that they might after examination receive some sort of certificate as Anæsthetists. I think too that some extra remuneration should be given to such dispensers who act regularly as anaesthetists. Two deaths occurred after operation, one after an operation for strangulated hernia which involved the re-section of over 5 ft. of intestine; the other after an operation for radical cure of hernia from Acidosis and delayed chloroform poisoning, three days after the operation.

The following are some of the main operations performed :—

Amputation of scrotum for Elephantiasis	14
Radical cure of Hernia	30
Radical cure of Hydrocele	31
Cataract Extraction	18
Hysterectomy for Uterine Fibroid	6
Ovariectomy	1
Depressed fracture of skull with laceration of brain	1

Radical cure of hernia is often a considerable operation especially when the patient has had it for 15 or 20 years, and has possibly had previous filarial inflammation; or where it has been cauterized, or even possibly tapped. It is often complicated by lymphatic varix.

Hydrocele is frequently double, the sac may be thickened or even calcareous, and often there is much evidence of previous inflammation due to filaria or to tapping by a native doctor.

Several of the uterine fibroids were large; one weighed 17lbs another 27lbs and one 40lbs, a truly enormous tumour. The ovarian cyst contained 40 pints of fluid. Among simple tumours the following were removed:—Keloidal Fibroma, Lipoma, Ivory exostosis, Dermoid cyst, Serous cyst, Parotid cyst.

Three Sarcomata were removed, a myosarcoma of the groin in a boy of seven, a sarcoma possibly of a supernumerary mamma from the axillary fold of a child of 15 months, and a melanotic sarcoma of the heel in an old woman; and two other inoperable cases were observed in out-patients. One recurrent carcinoma was removed from an Indian woman.

Two post-mortems were performed where death had been sudden and where foul play was suspected. Both deaths proved to be due to natural causes, pulmonary embolism in one case, and pneumonia in the other.

Dispensaries.—Sub-Assistant Surgeon Joshi has been in charge at Weti throughout the year. The new hospital and dispensary building was occupied at the end of the year. It is a great improvement on the old building, but the accommodation for in-patients is not much increased. There is room for 8 male and 4 female patients. At Mkoani, Sub-Assistant Surgeon Ramrao was in charge at the beginning of the year having been sent to Pemba especially to help with the Influenza epidemic. In February he was replaced by dispenser S. B. P. Fernandes. The latter was relieved by dispenser C. A. Almeida, and in December Dispenser G. A. Gomes took charge. The number of patients at Weti are much the same for the last 4 years; the in-patients at Mkoani show an encouraging increase

ROBERT HOWARD.

Medical Officer.

REPORT ON THE PUBLIC HEALTH DIVISION.

FOR THE YEAR 1919.

This belated report may well be reduced to a minimum as there has been a disappointing lack of any progress on development, proper supervision over important details of established routine has been impossible, reforms of increasing urgency and repeatedly pressed have been further postponed indefinitely, and all educational work has been at a standstill.

The post of Medical Officer of Health was temporarily occupied by Dr. Spurrier, C.M.G. On his departure, and that of Dr. Aders, Economic Biologist, in August and with the posts both of Medical Officer of Health and Assistant Medical Officer of Health vacant, their offices, laboratory and outside duties including those of Port Medical Officer devolved upon the Principal Medical Officer in spite of shortage in the staff of the Medical Division.

PART I.—SANITATION.

The following table covers the routine general sanitation work in Zanzibar town for the year.

TABLE I.

GENERAL SANITATION ZANZIBAR TOWN, 1919.

The routine work performed during the year is as follows:—

Inspectors	...	...	...	...	...	17
Inspections of premises	...	...	...	...	...	3,666
General Nuisance Notices	...	...	...	...	...	577
Prosecution and Conviction	...	...	...	...	...	1
Visits to Hotels and Boarding Houses	...	...	...	...	...	2,658
Notices Served	...	...	...	...	...	22
Godowns Inspected	...	...	...	...	...	1,151
Notices Served	...	...	...	...	...	4
Visits to Bake-houses	...	...	...	...	...	167
Visits to Dairies and Cow-sheds	...	...	...	...	...	1,237
Notices served	...	...	...	...	...	32
Visits to Food-Stalls and Markets	...	...	...	...	...	2,245
Average number of cesspools oiled weekly	...	...	...	...	...	170
Average of oil used weekly, (gallons)	...	...	...	...	...	8
Latrines regularly cleaned	...	...	...	...	...	4
Public Urinals regularly cleaned	...	...	...	...	...	5
Public Lands and Grave-yards regularly cleaned	...	...	...	...	...	130
Houses cleaned and disinfected	...	...	...	...	...	10
Cart-loads of refuse removed	...	...	...	...	...	44,078
Rats collected, trapped or poisoned	...	...	...	...	...	12,948
Pariah Dogs destroyed	...	...	...	...	...	39
Burial of paupers and others carried out	...	...	...	...	...	31
Visits to dwelling houses etc., for mosquito nuisances	...	...	...	...	...	41,558
Notices served	...	...	...	...	...	346

Water Supply.—No progress has been made towards the acquisition of a more plentiful town water supply and no action has been taken to safeguard the Chem-Chem collecting area against surface contamination.

Those hydrants where trapped cess-pits have been provided for the overflow have proved most satisfactory. Some lying at low levels fill very rapidly and require emptying frequently, but even so the condition is better than a constant daily trickle of water encouraging the growth of vegetation and providing perennial anopheline breeding places.

Drainage.—There is nothing to add to the past criticism of existing drainage channels as regards faults in construction, fall, want of flushing and silting of sand and debris of friable road surfaces.

Cess-pools and Privy Pits.—No progress has been made in the provision of further water seal traps in connection with cess-pits with the aim of supplying a barrier against entry of mosquitoes. Cess-pools provided with moveable covers for ease of access for oiling increased from 192 in 1918 to 230 at the close of the year. The monthly oiling of such cesspools consumed 400 gallons of an equal mixture of crude and refined kerosine oil.

Sewage Disposal.—Water closets were introduced into a few more European dwelling-houses, these are drained to cess-pits until such time as a limited water carriage system of drainage is accomplished.

In all cases of houses where owners had applied to the Public Works Department for permission to repair, enlarge or alter their premises and where such plans were submitted to the Medical Officer of Health for his opinion special care was taken to endeavour to improve existing privy pit systems as regards light, ventilation, isolation from kitchens and dwelling rooms, and position against an outside wall.

Town Refuse Collection and Disposal.—There was no improvement in the conditions of collection of house, etc., refuse beyond the provision of a few more iron refuse bins made of corrugated iron with the corrugation flattened out.

The Destructor continued to cause nuisances by smoke, dust and flies. The few rail incinerators put up at inaccessible sites in the native town of Ngambo have lessened dumps of rubbish previously impossible of removal to the destructor owing to broken paths, but their utility varies much according to the character of the refuse brought to them: incinerated and charred rubbish has been used for levelling and for filling potential pools.

Dairies and Cow-sheds.—Much care has been spent on the detail of the design for the first of the new cow-sheds for the area of ground

which has been acquired as the New Town Dairy Site. The area chosen is of some four and half acres in extent in Mwembeni Ziwani District, in Ngambo, between the cemeteries and orange garden and the Ziwani corner. The public dipping tank for cattle is being constructed on the same site.

During the year part of a wing of the Government Stables was partitioned off and provided with its own separate door and this will be utilized as a temporary cow-shed into which to evict cows while insanitary cow-sheds are repaired and re-modelled.

Markets.—No improvement were effected during the year nor was any additional accommodation provided.

Town Planning and Improvement.—Realizing the inability of the Medical Officer of Health to arouse any interest in the insanitary housing conditions of the majority of the bazaar residents and the futility of his single voiced complaints year in and year out against the immoveable inertia of apathy and ignorance of the actual state of affairs, it was suggested that a Town Planning and Improvement Committee should be framed. The proposal was approved and a representative body selected to form the first Committee but nothing further has been designed or achieved.

TABLE II.

Breeding places of various kinds of mosquitoes found in Zanzibar Town during 1919.

Months	Tanks, Cisterns, Drums & Barrels			Drains & Cesspools			Trees & Plants			Old tins, broken bottles etc.			Boats, etc.			Swamps & Pools			Total			Rain fall.
	S	C	A	S	C	A	S	C	A	S	C	A	S	C	A	S	C	A	S	C	A	
1919																						inches.
January	48	0	0	2	7	2	0	0	0	0	0	0	0	0	0	0	1	4	57	8	6	2.02
February	50	2	0	0	4	0	0	0	0	0	0	0	0	0	0	0	3	3	56	9	3	1.07
March	36	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	2	2	45	7	2	7.27
April	19	1	0	2	10	0	0	0	0	6	0	0	0	0	0	0	0	0	27	11	0	8.85
May	21	0	0	0	1	2	0	0	0	5	0	0	0	0	0	0	1	4	26	8	6	2.81
June	14	1	1	0	0	0	0	0	0	3	1	0	0	0	0	0	1	1	17	3	2	0.20
July	18	1	0	1	1	0	0	0	0	5	0	0	0	0	0	0	0	2	24	2	2	3.00
August	22	1	3	1	4	1	0	0	0	1	0	0	0	0	0	0	2	5	21	7	10	1.63
September	7	5	3	1	1	1	0	0	0	4	0	0	0	0	0	0	0	8	15	6	12	1.46
October	19	1	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	16	21	2	16	3.21
November	8	0	0	11	0	5	0	0	0	6	0	0	0	0	0	0	0	12	25	0	17	11.81
December	15	1	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	10	16	3	10	1.65
Total	277	14	7	19	37	11	3	0	0	54	2	1	0	0	0	0	13	67	353	66	86	47.98

S. *Stegomyia fasciata*. C. *Culex*. A. *Anopheles*.

Mosquito Preventive Measures.—In town the district Mosquito Inspectors have carried on their weekly house-to-house visits and in premises which they know and where the inmates realize the benefits of freedom from mosquitoes the results are satisfactory. It is still evident that a preliminary detailed survey of every house must be made by a Medical Officer of Health and all actual and potential breeding places carefully recorded, advice must be given to the householder as to diminishing the number of water vessels exposed and protecting those which are necessary, and rain water pipes, cisterns, overflows from water pumps, cesspools, etc. in houses must be controlled or protected against mosquitoes. The Inspectors are frequently restricted in their investigations on the plea that the day is unsuitable, that the master of the house is absent, that there is illness or mourning in the house, that the womenfolk are unveiled, that food is being cooked, etc., in other cases the Inspectors are diffident about entering and searching European houses or those of influential Arabs and Indians, and it must be granted that the Inspectors do not always put much intelligence into their work, are not naturally observative, and in many cases are not stimulated by keen interest when left to themselves.

Much more would be accomplished, when the staff permits of it, by surprise visits of a Medical Officer of Health, his occasionally accompanying the Inspectors in their rounds and explaining to householders their duties and the reasons for their visits and also by lectures and demonstrations to all classes of town residents. The swamp breeding anopheline has been less in evidence owing to an unusually dry year, but they are constantly to be found in certain swampy areas and shallow wells only a short distance beyond the outskirts of the town and with the development of flightpools in the rains still gain access to the town for short periods.

It is a matter for regret that the small works still necessary to complete the expensive drainage of the old permanent swamps some years ago are still postponed and that existing channels and cuttings are not always kept clear.

It should be possible to have no permanent anopheline breeding places nearer than the valley beyond the Punjabai Club on the North and the Mpoponi Swamps on the South.

PART II.—PREVALENCE OF CERTAIN COMMUNICABLE DISEASES.

Ships from Indian ports are the greatest source of danger as regards importation of epidemic infectious diseases to this Island Protectorate and secondarily shipping from adjacent African territories when such diseases are epidemic there. Except for a slight recrudescence of Influenza in the months of September and October the Protectorate was fortunately maintained satisfactorily free of epidemic disease.

Influenza.—13 deaths are recorded as compared to some 182 in town and neighbouring districts in the previous year. Of the 13 deaths 11 occurred in September and October.

Cerebro-Spinal-Meningitis.—One fatal case occurred in the Infectious Diseases Hospital, as compared to 5 and 23 cases in the previous two years. The case originated in the Mkamasini district of the native town but no source of infection was traced.

Dysentery.—14 deaths are recorded, in 1918 there were 23.

Plague.—No case occurred.

During the year 12,948 rats were brought in and from these 10,870 spleen smears were examined of which one morphologically was suspicious of *B. pestis* but cultural or other proof was impossible.

Tetanus.—One case, 3 in 1918.

Tuberculosis.—37 deaths from Pulmonary Tuberculosis were registered by qualified practitioners, 110 by unqualified persons as compared to 44 and 144 respectively in 1918.

The total of 147 is comparable to 188 and 190 in recent years.

Small-pox.—4 cases were reported during the year. One case was landed off a ship and proved fatal, the other three originated in town.

Of the local cases two occurred separately in the month of October and one in December, they were respectively Indian and Arab and there was no communication between them, although the probable sources of infection came from the Mainland where Small-pox was present in epidemic proportions. In each case the entire household was removed to Gulioni Fever Hospital and kept there for a few days while vaccination, and cleansing and disinfection of clothing and persons were carried out, the dwelling houses with their contents being disinfected with Clayton Gas Machine. The Indian case proved the value of the Inspector of Dead in connection with infectious diseases. He was called to give a certificate of burial for the body of an infant of one month old, on inspecting the body he diagnosed Small-pox and summoned the Medical Officer of Health. The latter confirmed the diagnosis, forbade some ten mourning women of various ages to leave the sick room till they had obtained a change of clothing, secured their addresses for vaccination of themselves and their households, retained their garments for disinfection within the infected house, and instituted daily visits of inspection of themselves and their own scattered households. No further case occurred amongst them.

WALEZO LEPPER ASYLUM, ZANZIBAR.

This Asylum and the neighbouring Sick Poor House, both under the charge of the Roman Catholic Mission, are visited at least once

weekly by the Medical Officer of Health or a Sub-Assistant Surgeon, some of the buildings as also the surrounding fence are in disrepair.

TABLE III.

Walezo Leper Asylum, Zanzibar.

Particulars	Males	Females	Total
Remaining on 1st January, 1919	34	52	88
Admitted during the year	2	1	3
Discharged „ „ „	...	...	...
Died „ „ „	6	6	12
Escaped „ „ „	4	2	6
Remaining on 31st December, 1919	26	47	73

Leper Settlements, Pemba

Particulars	Nduni	Kengeja	Pujini
Average monthly numbers	43	33	64

Monthly average total in the three settlements, 140.

Funzi Island of Pemba has definitely been secured as a leper station and the necessary huts will be built as soon as the medical staff of Pemba is sufficient to allow of supervision of building and removal of lepers from the existing settlements.

PART III.—PREVENTION OF INFECTIOUS DISEASES.

PORT HEALTH SERVICE.

The work undertaken in 1919 is analysed in Table IV. below. It will be seen that although ships arriving numbered 188, i.e. 126 fewer than in 1918, the total number of passengers landed showed an increase from 7197 in 1918 to 9341 and the number kept under surveillance increased from 585 to 2051. The number of dhows dealt with during the year was 1795 as compared to 1508 in 1918. and dhow passengers increased from 4133 to 5550.

TABLE IV.

PORT SANITATION RETURN 1919.

	Arrivals		Restricted ships	Ships Claytonised	Passengers landed	Passengers under surveillance	Persons vaccinated	Persons placed in quarantine
	British	Foreign						
<i>Steamers</i>								
January	11	1	6	2	674	393	721	650
February	9	..	..	..	530	290	..	..
March	14	3	1	..	892	142	208	250
April	12	..	1	..	770	36	..	329
May	13	..	..	..	708	..	..	..
June	16	2	..	..	827	..	..	..
July	16	2	..	..	987	183	..	..
August	13	3	..	1	829	41	..	..
September	15	3	..	..	800	225	..	..
October	17	4	..	..	735	370	..	..
November	12	3	..	..	887	213	..	..
December	18	1	..	..	698	158	..	..
Sailing ships	..	2	..	..	4	..	..	..
Total ..	166	24	8	4	9341	2051	929	1229
Total for 1918 ..	298	16	7	19	7197	585	2406	2581
<i>Dhows</i>								
January	95	68	5	25	252	..	..	..
February	90	100	..	74	686	..	..	63
March	103	142	101	..	793	..	31	..
April	101	39	2	..	450	..	..	..
May	113	32	..	..	515	..	..	..
June	87	27	..	..	305	..	..	..
July	96	23	..	..	225	..	66	..
August	84	29	..	..	443	16	24	..
September	104	29	..	..	565	..	60	..
October	105	27	..	..	365	..	44	..
November	108	21	..	..	289	137	50	..
December	133	39	..	..	662	228	25	18
Total ..	1219	576	108	99	5550	381	300	81
Total for 1918 ..	1131	426	..	1	4133	47	2602	..

QUARANTINE STATION.

As will be seen from the table below the total number of persons quarantined during the year was 2007 as compared to 3023 in 1918 and 2157 in 1917. Whereas the station was only empty in the month of June, in the year under consideration it was vacant from June to December.

TABLE V.

Return of Persons Quarantined during 1919.

	Remaining	Admitted	TOTAL	Discharged	Died	Remaining	Largest No. on one day	No. of days station occupied	Remarks.
January* ...	148	650	798	314	...	484	517	21	
February ...	484	63	547	483	1	63	484	27	ex dhow.
March ...	63	250	313	313	...	...	250	14	ss. Pundua.
April ...	...	329	329	327	...	2	329	10	ss. Taroba.
May ...	2	...	2	2	...	...	2	2	
June ...	...	...	...	...	...	...	...	...
July ...	...	...	...	...	...	...	...	...
August ...	...	...	...	...	...	...	...	...
September ...	...	...	...	...	...	...	...	...
October ...	...	...	...	...	...	...	...	...
November ..	...	...	...	...	...	...	...	...
December ...	...	18	18	18	...	...	12	9	ex dhow.
Total ...	697	1310	2007	1457	1	549	1594	83	

* During January the passengers of ss. "Benvenue", "Golden Crown" and "Iran" were quarantined on account of Influenza and ss. "Taroba" on account of Small-pox on board.

INFECTIOUS DISEASES HOSPITAL.

TABLE VI.

The following Return shows the number of Cases treated at the Infectious Diseases Hospital, at Gulioni, during 1919.

Diseases	Remaining of 1918	Admitted	Discharged	Died	Remaining
Cerebro-spinal Meningitis..	..	2	1	1	..
Bronchitis-Capillary ..	..	1	..	1	..
Consumption ..	..	1	1	..	..
Malaria ..	..	3	3	..	..
Measles ..	..	7	7	..	..
Pneumonia ..	..	4	1	3	..
Small-pox ..	1	3	3	..	1
Contacts ..	1	66	63	..	4
Total ..	2	87	79	5	5

PART IV. BACTERIOLOGICAL AND CHEMICAL LABORATORIES.

Laboratory work had of necessity to be reduced to a minimum owing to lack of staff and was practically limited to microscopic examination of daily rat smears and specimens for diagnosis. It is hoped that in 1920 an experienced Indian Laboratory Assistant may be secured qualified to undertake serological tests and the preparation of culture, vaccines, etc., in addition to routine microscopic work.

It is further necessary as soon as possible to re-organize the periodical examination of samples of milk, drinking water, mineral waters, etc.

The following table records the examination of 12,043 specimens as compared to 16,148 in the previous year.

TABLE VII.

Bacteriological Laboratory Return, 1919.

Materials	No. exam- nations.	Remarks.
Blood smears ...	43	Benign Tertian present 2 Sub- " " 9 } 13 Quartan 1 Crescent 1
Sputa ...	56	T. B. present 14 } 15 Pneumonia 1
Nasal Scrapings for B. Leprae ...	47	Positive 30
Urines for Analysis ...	20	Gonococci present 4 } 7 Bilharzia 2 Bile Trace 1
Smears vaginalis and urethral ...	12	Gonococci present 8
Faeces for Ova ...	995	Ankylostoma duode- nale 690 } 741 Ascaris lumbricoides 49 Bilharzia Ova Rec. 1 Amoebae and cysts 1
Spleen smears of rats for bac. pestis. ...	10870	Highly suspicious 1
Total ...	12,043	

PART V.

VITAL STATISTICS.

Population.—The following tables give the results of the last census taken nine years ago:—

TABLE VIII.

Population of Zanzibar and Pemba,—Census 1910.

				Males	Females	Children	Total
Zanzibar.							
Zanzibar Town	...	...		15,122	14,304	5,396	34,822
Mwera District	...	...		11,239	13,206	4,656	29,101
Chwaka District	...	...		5,617	7,458	4,553	17,628
Mkokotoni District	...	...		11,013	14,242	6,818	32,073
Total				42,991	49,210	21,423	113,624
Pemba.							
Chake Chake District	...	...		10,757	13,597	8,958	33,312
Weti District	...	...		11,416	11,002	8,307	30,725
Mkoani District	...	...		6,290	7,295	5,487	19,072
Total				28,463	31,894	22,752	83,109
Grand Total				71,454	81,104	44,175	196,733

Until a new and more accurate census is taken and more exact registration of births is enforced any vital statistics must be unreliable. It is probable that the records of deaths are more accurate.

(a) Number of births registered in the Town District of Zanzibar during 1919:—

Males	...	175	
Females	...	166	
			341
Still-born			23
Total			364

(b) Nationalities of births registered in Zanzibar Town District of Zanzibar of 1919:—

Ismaili Khoja,	93	Mohammedan Indian,	18
Hindu,	42	Comoro,	5
Ithnasheri Khoja,	37	East Indian,	3
Arab, Shihiri, etc.	37	Baluchi	2
Bohora,	40	Manyema,	2
Swahili,	22	Parsee,	1
Goan,	19	Syrian,	1
Memon,	19		
Total,	341.		

(c) Total number of births registered in the Island of Zanzibar since 1913:—

TABLE IX.

Districts	1919	1918	1917	1916	1915	1914	1913
Town Districts ...	341	418	305	296	332	401	576
Mkokotoni Dist.	720	930	1,559	1,099	1,023	511	634
Mwera „ ...	313	479	430	490	426	245	287
Chwaka „ ...	402	384	392	469	458	190	253
Total ...	1,776	2,211	2,686	2,354	2,239	1,347	1,750

The comparative figures as registered are shown in the following:—

		During	1914.	1915.	1916.	1917.	1918.	1919.
Town Districts	{ Births	...	401	332	296	305	418	341
	{ Deaths	...	1239	1008	1168	1205	1359	1180
Out-Districts	{ Births	...	946	1907	2058	2381	1793	1435
	{ Deaths	...	1821	2212	2089	2235	2515	1983

DEATHS.

(a) The number of deaths registered in Town District during 1919 was:—

Males,	...	605
Females	...	575
Total		1180

An increase of 104 over the deaths of 1918.

(b) Nationality of the deceased in Town District:—

Swahili	...	608	Memon	19
Other African		85	Baluchi	11
Comoro,	...	82	Somali	7
Ismaili Khoja	...	67	Goan	3
Arab		64	Parsee	2
Shihiri	...	62	Persian	2
Mohammedan Indian		52	Indian Christian	1
Ithnasheri Khoja		51	Chinese	1
Bohora		31	Japanese	1
Hindu	...	30	European	1
Total				1,180.

General causes of death in Town District:—

The following returns are divided not into sexes but according to whether a qualified Medical man or an unqualified person (Sub-Assistant Surgeons, Inspector of the Dead, etc.) certified the cause of death in order to keep them comparable to previous year:—

TABLE X.

Return of General Causes of Deaths—Zanzibar Town Districts, 1919

Diseases		Quali- fied	Unquali- fied	Total
INFECTIVE DISEASES.				
Cerebro-spinal meningitis	...	1	...	1
Dysentery-Amœbic	...	14	...	14
Erysipelas	...	1	...	1
Gonorrhœa	...	1	3	4
Influenza	...	13	...	13
Leprosy	...	12	...	12
Malaria	...	20	19	39
Pneumonia	...	31	30	61
Pyæmia	...	2	...	2
Septicaemia	...	4	...	4
Small-Pox	...	2	...	2
Syphilis	...	3	...	3
„ Congenital	...	1	...	1
Tetanus	...	1	...	1
Tuberculosis	...	38	110	148
Whooping Cough	...	8	...	8
Undefined Fever	...	2	37	39
GENERAL DISEASES.				
Anæmia	...	3	45	48
Debility	...	29	183	212
Diabetes	...	2	...	2
Gangrene	...	1	...	1
Gout	...	...	1	1
Rheumatism Chronic	...	1	28	29
LOCAL DISEASES.				
<i>Diseases of the Nervous System.</i>				
Sub-Section I.				
Abscess of Brain	...	2	...	2
Cerebral Hæmorrhage	...	5	1	6
Encephalitis	...	1	...	1
Meningitis	...	2	...	2
Tabis Dorsalis	...	1	...	1
Sub-Section II.				
Epilepsy	...	4	...	4
Infantile Convulsions	...	9	38	47
Paralysis	...	7	32	39
Sub-Section III.				
Insanity	...	12	34	46
<i>Diseases of the Circulatory System.</i>				
Congenital Heart Disease	...	1	...	1
Endocarditis	...	2	...	2
Heart Failure	...	4	1	5
Valvular, aortic	...	1	...	1
Syncope	...	2	...	2
Carried forward	...	243	562	805

TABLE X.

Return of General Causes of Deaths—Zanzibar Town Districts,
1919.—*Contd.*

Diseases	Quali- fied	Unquali- fied	Total
LOCAL DISEASES.—(<i>continued</i>)			
Brought forward ...	243	562	805
<i>Diseases of the Respiratory System.</i>			
Abscess of Lung ...	1	...	1
Acute Bronchitis ...	7	18	25
Chronic ...	4	128	132
Capillary ...	4	...	4
Asthma ...	5	8	13
Pleurisy ...	1	...	1
<i>Diseases of the Digestive System.</i>			
Diarrhœa ...	18	86	104
Enteritis ...	4	...	4
Hepatic Cirrhosis ...	6	...	6
Hernia... ...	...	1	1
Diarrhœa Infantile... ...	...	2	2
Intestinal Obstruction ...	1	...	1
Peritonitis ...	1	...	1
Tonsillitis ...	1	...	1
<i>Diseases of the Urinary System.</i>			
Dropsy ...	3	...	3
Nephritis, Acute ...	3	...	3
Bright's Disease ...	5	10	15
<i>Diseases of the Generative System.</i>			
Male Organs.—			
Orchitis ...	...	2	2
Female Organs —			
Premature birth ...	4	2	6
Prolonged Labour ...	1	...	1
Puerperal Septicæmia ...	2	...	2
<i>Diseases of Connective Tissues.</i>			
Cellulitis ...	2	...	2
<i>Injuries.</i>			
General ...	5	1	6
Local ...	9	1	10
<i>Local Diseases</i>			
Tumours, Malignant ...	2	...	2
<i>Parasites.</i>			
Ankylostomiasis ...	18	...	18
Elephantiasis ...	3	2	5
Filariasis ...	1	...	1
<i>Unclassified Causes and Undefined Diagnoses</i>			
... ..	3	...	3
Total ...	357	823	1180

(b) Total number of deaths registered annually in the Island of Zanzibar since 1912.

TABLE XI.

Districts	1919	1918	1917	1916	1915	1914	1913	1912
Town District ..	1180	1359	1255	1168	1008	1317	1123	1284
Mkokotoni District ..	859	1109	947	881	1005	801	889	1116
Chwaka District ..	402	451	444	394	378	299	328	782
Mwera District ..	718	955	844	814	829	721	766	1071
Total ..	3159	3874	3490	3257	3220	3138	3111	4253

TABLE XII.

Monthly Distribution of Deaths Registered in Zanzibar Island during 1919 compared with the average for the previous 7 years.

(Deaths at Walezo are *not* included in this return)

	Town	Mwera	Chwaka	Mkokotoni	Total
January ...	82	78	31	64	255
Average 7 years ...	79.2	57.9	29.1	68.8	235.0
February ...	80	29	19	50	178
Average 7 years ...	72.5	49.0	22.6	60.7	204.9
March ...	84	44	18	60	206
Average 7 years ...	85.4	54.7	25.0	60.3	225.4
April ...	90	51	33	71	245
Average 7 years ...	81.4	60.6	27.8	65.3	235.1
May ...	92	61	24	67	244
Average 7 years ...	99.8	65.6	33.4	83.1	282.0
June ...	80	55	49	76	260
Average 7 years ...	109.8	61.8	29.6	82.0	283.3
July ...	95	64	35	58	252
Average 7 years ...	99.8	72.3	34.7	91.8	298.7
August ...	88	58	30	77	253
Average 7 years ...	101.6	80.4	33.8	90.9	306.7
September ...	98	72	29	74	273
Average 7 years ...	89.8	84.4	31.7	72.3	279.7
October ...	130	79	47	97	353
Average 7 years ...	104.3	93.1	35.8	99.7	333.0
November ...	90	65	41	80	276
Average 7 years ...	104.0	98.1	61.6	101.0	374.7
December ...	97	62	46	85	290
Average 7 years ...	99.1	79.1	63.3	88.3	329.9
Total ...	1106	718	402	859	3085
Average 7 years ...	1137.0	857.1	428.6	964.3	3387.0

PART VI. METEOROLOGY.

The following tables have been compiled from the monthly returns published by the Director of Agriculture. The records for Zanzibar Town are kept by Dr Charlesworth, those of Banani in Pemba Island by the Friends Industrial Mission.

The rainfall in Zanzibar was unusually small only totalling 48 inches as compared to an average of 56·5 in the previous eight years. Instead of some 20 to 28 inches of "great rains" in April and May those months only gave 11·6 inches.

Pemba's rainfall of 88·4 inches was well up to the average.

TABLE XIII.
Monthly Rainfall—Zanzibar Town, 1910 to 1919.

	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	Average
January	4.71	0.54	4.36	0.39	2.84	1.74	1.63	2.20	2.33	2.02	2.27
February	2.36	0.01	6.99	1.37	0.05	0.76	3.50	4.29	1.36	1.07	2.17
March	0.30	9.92	7.39	9.99	8.56	6.03	2.29	4.46	4.37	7.27	6.12
April	14.52	13.40	13.09	17.59	12.69	9.62	33.35	16.49	11.55	8.85	15.81
May	11.77	17.51	3.45	11.18	3.84	10.30	4.35	10.63	9.66	2.81	8.55
June	0.02	2.24	0.47	0.07	0.88	5.00	1.38	4.20	6.27	0.20	2.07
July	3.30	1.53	0.03	0.31	0.22	3.94	0.38	1.23	4.86	3.00	1.88
August	1.82	1.76	1.04	0.88	3.65	0.45	2.11	2.05	0.60	1.63	1.60
September	0.67	1.22	6.59	2.58	1.04	1.17	2.81	2.01	0.76	1.46	2.03
October	1.81	2.89	0.98	4.22	0.89	2.63	5.83	2.27	5.77	3.21	3.05
November	7.47	6.26	5.70	3.20	4.32	9.38	2.94	6.79	2.18	11.81	6.00
December	8.08	1.86	17.82	1.31	4.37	0.61	2.92	0.44	6.79	4.65	4.84
Total	56.83	59.14	67.91	53.09	43.35	51.63	63.49	57.06	56.50	47.98	55.69

TABLE XIV.
 Meteorological Observations—Zanzibar Town and Banani, Pemba, 1919.

BANANI, PEMBA											
ZANZIBAR TOWN											
	Rainfall	Relative Humidity	Mean Maximum Temperature	Mean Minimum Temperature	Absolute Maximum Temperature	Absolute Minimum Temperature	Rainfall	Mean Maximum Temperature	Mean Minimum Temperature	Absolute Maximum Temperature	Absolute Minimum Temperature
January	2.02	75	87.1	80.1	89.4	76.4	1.52	88.1	79.9	90.0	78.0
February	1.07	73	89.1	81.1	93.3	80.1	0.09	89.8	80.5	92.5	79.0
March	7.27	75	88.3	79.8	91.2	72.4	9.84	89.2	80.0	92.5	75.0
April	8.85	79	86.6	78.8	90.7	75.4	23.63	87.4	61.1	92.0	75.0
May	2.81	74	84.4	76.2	86.0	73.4	13.30	85.1	76.9	89.5	74.0
June	0.20	77	82.8	74.2	84.7	71.9	8.37	83.1	74.8	86.5	71.0
July	3.00	79	81.4	73.1	84.6	70.4	6.21	82.2	76.1	85.0	71.0
August	1.63	70	82.9	73.1	85.9	71.1	2.07	83.1	73.2	87.0	70.0
September	1.46	76	84.3	74.4	87.1	72.6	0.69	84.8	74.6	87.0	73.0
October	3.21	75	85.5	76.0	88.8	74.0	4.19	85.9	76.4	88.0	75.0
November	11.81	75	86.0	77.6	91.3	74.4	9.09	87.0	77.1	89.0	76.0
December	4.65	74	87.7	79.9	90.0	77.1	9.44	88.4	79.0	90.0	75.0

PART VII.—GENERAL.

CONTROL OF OPIUM.

In his report on the controlled issue of opium to registered habitues in Zanzibar Dr. D'Mello shows a further decrease in their number from 219 in 1918 to 188, and a decrease in the average monthly consumption of opium from 7 to 6 lbs.

The following table shows the races and sexes of those on the register at the close of 1919 as compared to 1918.

TABLE XV.

Race	1919			1918
	Male	Female	Total	Total
INDIAN:—				
Ismaili ...	13	24	37	36
Suni (Memon) ...	31	11	42	46
Ithnasheri Khoja ...	9	4	13	18
Banyan ...	8	...	8	11
Pathan ...	2	...	2	3
Baluchi ...	3	...	3	3
Rajput ...	2	...	2	3
Bohora ...	...	1	1	1
Hurdu ...	1	...	1	2
OTHERS:—				
Swahili ...	47	5	52	60
Arab ...	20	...	20	27
Persian ...	2	...	2	4
Comoro ...	...	...	...	4
Shihiri ...	2	...	2	1
Gazija ...	3	...	3	...
Total ...	143	45	188	219

WALEZO SICK POOR-HOUSE.

The following table shows the number of Sick Paupers cared for at the Walezo Poor-House during the year 1919 is shown in the following table.

Particulars	Males	Females	Total
Remaining on 1st January, 1919 ..	17	23	40
Admitted during the year, 1919 ..	95	40	135
Died ..	39	23	62
Discharged ..	29	10	39
Escaped ..	18	8	26
Remaining 31st December, 1919 ..	25	22	47

FINANCIAL.

The sanctioned Public Health Division Budget for the year 1919 was Rs. 220,794, of which Rs. 180,430-65 cts. were spent, leaving a balance of Rs. 40,363-35 cts.

EXPENDITURE.

Particulars of votes.	Estimate.		Actual Expenditure.				
	Rs.	£.	Rs.	cts.	£.	s.	d.
PERSONAL EMOLUMENTS							
Under this heading are included the salaries and duty allowances of the Medical Officers of Health, Economic Biologist, Veterinary Officer, Sub-Assistant Surgeons, Sanitary Inspectors, Inoculators, Vaccinators, Rat Trappers and Dissectors, Mosquito Inspectors, Disinfecting Engineer, Clerks, Caretakers, Scavengers, etc.	150,154	10,010	128,550	83	8,570	1	1
OTHER CHARGES.							
Under this heading are included passages and travelling allowances, Suppression of Infectious Diseases, Quarantine Station, Upkeep of Laboratory, Museum, Cattle Quarantine Station, Slaughter House, Markets, Dhobi Station, Mwembe-Ladu Graveyard, Leper Asylums, Poor House, Motor Boat, Motor Cycle, Purchase of Disinfectants, Drugs and Dressings, Vaccines, Serums, Sanitary Appliances, Furniture, Uniforms, etc.	70,640	4,709	51,879	82	3,458	13	1

H. CURWEN, P. M. O.
for Medical Officer of Health.

REPORT OF THE PUBLIC HEALTH DEPARTMENT, PEMBA, 1919.

During 1918 the work of the Public Health Department was carried on under the greatest difficulties. After Dr. Dunderdale left in April there was no Medical Officer in residence; and in November and December the island suffered severely from the prevalent pandemic of Influenza. Further, Dr. McHattie, Medical Officer of Health of Zanzibar, who made a tour of inspection in June, died suddenly in Zanzibar in November, before he had been able to carry out any of the improvements and developments that he had projected. Under these circumstances it is greatly to the credit of the Sanitary Inspector, Mr. Jadowji, that the organization and activities of the department were maintained throughout the year; and acknowledgement must also be made of the kindness of the Assistant District Commissioner, Chake Chake, Mr. A. H. White, who exercised general supervision over the work.

In 1919, the Sanitary Inspector went on leave, returning in October. His place was taken temporarily by the Sub-Inspector from Weti, and the Sub-Inspector from Mkoani was transferred to Weti.

In January Dr. Howard became Medical Officer, Pemba, and remained throughout the year. At first he was expected to give voluntarily a certain amount of supervision to the Health Office, but from April onwards he was definitely appointed to act as Health Officer for Pemba.

It is not possible to report any definite progress during the year, for no money had been allowed in the estimates for carrying out the improvements which had been suggested in recent reports; but the routine work has been satisfactorily maintained.

In one point of organization an advance has been made, viz, in the establishment of a regular gang of workmen for bush clearing, training of ditches &c., instead of relying as heretofore on the intermittent employment of casual labour. Also, in connection with this work, a Mosquito Inspector was appointed in June.

It is hoped that on the return of the Economic Biologist from leave a regular mosquito survey of the three townships will be made. Such a survey would be of the greatest value in indicating the areas to which special attention should be paid, and also as a basis for working out schemes of permanent sanitary improvements. At present the fact that no land survey of the township of Chake Chake has been made, and the consequent absence of any map is a serious drawback.

Epidemic Disease.—There has been a remarkable absence of any epidemic disease throughout the year. A few cases of chicken-pox and mumps occurred. Influenza was absent at the beginning of the year, but made its re-appearance in a very mild form during the last quarter. In only a very few cases did pneumonia follow, and many

of the patients had nothing more serious than coryza and transient fever. Dysentery was practicably absent, the few cases seen being mainly chronic amœbic dysentery.

The absence of epidemic disease was fortunate as at present the island has no isolation hospital. The old isolation building at Chake Chake was in such a ruinous condition that it was demolished and the material suitable for reconstruction was stored. Owing to pressure of work the Public Works Department was unable to erect any new building. It is most earnestly to be hoped that such a dangerous anomaly as the total absence of a building for dealing with infectious disease in an island of some 83,000 inhabitants will speedily be removed. A suitable and sufficiently isolated site, close to the sea, on the ground below the general Hospital at Chake Chake, on the side remote from the town was approved by the Acting Medical Officer of Health, Dr. Spurrier, when he visited Pemba in May.

Before the war there was a considerable amount of dhow traffic between Pemba and the ports of British and German East Africa. This was naturally in abeyance during the war, but after the armistice it began to revive. There was obvious danger to Pemba of the importation of infectious disease, specially small-pox, cerebro-spinal meningitis and plague, and owing to the absence of any isolation hospital it was impossible to exercise either quarantine or surveillance, or to cope with epidemic disease should it be introduced. It was therefore decided that all dhows and all passengers from ports of Tanganyika Territory go first to Zanzibar and undergo quarantine or observation there before proceeding to Pemba; and that all direct traffic must cease until quarantine facilities should be available.

General Sanitation.—Chake Chake is built on a long straggling ridge surrounded and deeply indented by gulleys. All these carry streams of water after rain, and all are found at times to breed anopheles. The slope is steep and the soil friable, and the proper training and grading of these gulleys and the building of cement drains would be an expensive work. At present little can be done to control anopheles beyond weeding and clearing out ditches and occasional oiling; and the chief antimalarial measure has to be the use of prophylactic quinine.

A scheme was prepared by the Assistant Engineer, Public Works Department, for relaying the surface storm water drains along the main road, connecting with these drains all the overflows from the standpipes connected with the water supply, and discharging all this water into the shortest of the gulleys which could be properly cemented and graded. If carried out this would probably prove an anti-malarial measure of the greatest value.

Culex fatigans is terribly prevalent and so in consequence is Filariasis. This species of mosquito breeds mainly in the cesspools throughout the town. As these cannot be got rid of the remedy consists in insisting that all cesspools be properly trapped and regularly oiled. At present gully traps are unobtainable, so this measure cannot be enforced.

Stegomyia is not very prevalent, and should be kept in check by proper mosquito inspection and scavenging. Unfortunately its place is taken to some extent by the allied *Ochlerotatus Pembaensis*, a vicious day-biting mosquito, which breeds in crab holes by the sea shore. The control of such breeding places is practically impossible.

Flies are a scourge in the hot season, and are of course also a source of serious danger to the health of the community. They appear to breed mainly in the refuse dumps which are distributed in the outskirts of the town, and also in the droppings from the numerous donkeys which are stabled or tied up during the day in the township. Owing to frequent rains it is quite impossible properly to burn refuse at the pumps, and the obvious remedy is the construction of incinerators. This need has been mentioned year after year in the Sanitary Report, but no money has been voted for its construction. Next after an isolation hospital it is the most urgent sanitary requirement. The main incinerator for the town refuse would need a considerable roofed drying shed, on account of the heavy rainfall; also some oil, or other fuel would probably be frequently required. An additional small incinerator, similar to those recently established in several places in Zanzibar is also desirable for the destruction of waste from the Hospital and Isolation Hospital.

Vaccination has always presented difficulties in Pemba, for owing to the absence of cold storage it is impossible to keep lymph for any length of time after its importation from Zanzibar. Further, during the war, active and reliable lymph was frequently unobtainable. As a result of this much vaccination has been done in this island with inert lymph. This is disastrous, for it gives a false confidence to the unprotected individual, and it destroys the morale of the vaccinator, who ceases to expect any beneficial result from his work.

As at the end of the year the island was threatened with the introduction of small-pox from Zanzibar and from the mainland it was decided to inaugurate an arm-to-arm vaccination campaign throughout the island. A small quantity of active lymph was brought up on ice from Zanzibar, and was used at once on arrival; and subsequently glyceranated human lymph was employed from arm to arm. Of course in a country where Yaws is endemic certain risks are run, and the method is not ideal, but under the circumstances it seemed the best that was practicable. During December, 1670 vaccinations were done in the Chake Chake district, 487 at Weti, and 366 at Mkoani. The campaign was still in progress at the end of the year.

Leper Settlements.—Throughout the year the three village settlements have been maintained on the usual lines. The numbers at present are as follows:—

Pujini	63
Nduni	38
Kengeja	30
<hr/>	
Total	131

This represents a reduction of 13 during the year. There have been 21 deaths and only 10 admissions, while two have escaped and have not yet been traced.

It was found that during the last few years a number of suspicious cases which had not definitely been diagnosed had been allowed to return to their homes under orders to report again which they had failed to do. A determined effort was made to trace these cases and call them in for re-examination. Of 15 cases traced 3 were found suffering from Leprosy, and 12 were definitely discharged as free from the disease. In addition 17 new suspects were brought in, and of these 8 were undoubtedly lepers, and were sent to settlements, while 9 are still under observation. These last exhibit some symptoms of nerve leprosy but bacilli cannot be found and they are at present non-infectious. It is noteworthy that several recent acute infections were in comparatively young people, including boys of 10 and 14 years of age respectively, but in no case was the source of infection traced.

The shelter at Chake Chake where suspected lepers are housed pending examination by the Medical Officer is in a very bad condition, and has been pronounced unfit for habitation and not worth repair. It is to be hoped that a new hut will be built at the same time that the isolation hospital is constructed.

It has been decided to concentrate all the Pemba lepers on Funzi Island, which has been bought by the Government for the purpose, but the huts have not yet been built. This place will afford better isolation, and at the same time the lepers will benefit by more opportunities of cultivating land, and by a plentiful supply of fish, especially shell fish which are obtained there in quantities.

Funzi Island is within an hour's run by launch from Weti, but an expedition there and back from Chake Chake involves a whole day's journey. As it is intended to appoint a second Medical Officer for Pemba who will be stationed at Weti the care of all lepers will naturally come under his charge.

ROBERT HOWARD,
Acting Health Officer.

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